

What is claimed is:

1    1. A laser array imaging lens comprising, in order from a light-source side, without any  
2    intervening lens component:

3        a first lens component; and

4        a second lens component, one lens surface of which is aspheric;

5    wherein

6        at least one lens surface of the laser array imaging lens is formed with an anamorphic,  
7    aspheric surface; and

8        at least one lens surface of the laser array imaging lens is formed having a diffractive  
9    optical element with a phase function either superimposed thereon or is provided as a separate  
10   surface.

1    2. The laser array imaging lens according to claim 1, wherein a stop is positioned on the image-  
2    plane side of the first lens component at a specified distance.

1    3. In combination:

2        a laser array light source; and

3        a laser array imaging lens which receives light from the laser array light source, the laser  
4    array imaging lens comprising, in order from the light-source side, without any intervening lens  
5    component:

6        a first lens component; and

7        a second lens component, one lens surface of which is aspheric;

8    wherein

9        at least one lens surface of the laser array imaging lens is formed with an anamorphic,  
10        aspheric surface; and

11        the following condition is satisfied

$$0.5 < L / (D_{2l} \cdot (1 - 1/M)) < 2.0$$

13    where

14        L is the distance from the laser array light source to the light-source-side surface of the  
15        first lens component of the laser array imaging lens;

16         $D_{21}$  is the distance from the image-plane-side surface of the first lens component to the  
17        position where the central rays of the beams from the laser elements intersect the  
18        optical axis; and

19        M is the image magnification.

1        4. The combination according to claim 3, wherein a stop is positioned on the image-plane side of  
2        the first lens component at a specified distance.

1        5. An image-forming device that includes the laser array imaging lens according to claim 1, and  
2        further comprises:

3              a laser array light source made by arraying multiple light emitting elements in one or  
4        more rows;

5              means for independently modulating the individual light emitting elements of the laser  
6        array light source, based on a prescribed signal;

7              means for relatively moving a surface to be scanned, that is positioned substantially at an  
8        image surface of the laser array imaging lens, in a sub-scanning direction that is roughly  
9        perpendicular to the direction of the image dots that form one or more rows at the image surface.

1        6. An image-forming device that includes the laser array imaging lens according to claim 2, and  
2        further comprises:

3              a laser array light source made by arraying multiple light emitting elements in one or  
4        more rows;

5              means for independently modulating the individual light emitting elements of the laser  
6        array light source, based on a prescribed signal;

7              means for relatively moving a surface to be scanned and that is positioned substantially at  
8        the image surface of the laser array imaging lens, in a sub-scanning direction that is roughly

9       perpendicular to the direction of the imaged dots that form one or more rows at the image  
10      surface.

1       7. An image-forming device that includes the combination according to claim 3, and further  
2      comprises:

3           means for independently modulating the individual light emitting elements of the laser  
4      array light source, based on a prescribed signal;

5           means for relatively moving a surface to be scanned and that is positioned substantially at  
6      the image surface of the laser array imaging lens, in a sub-scanning direction that is roughly  
7      perpendicular to the direction of imaged light spots that form one or more rows at the image  
8      surface.

1       8. An image-forming device that includes the combination according to claim 4, and further  
2      comprises:

3           means for independently modulating the individual light emitting elements of the laser  
4      array light source, based on a prescribed signal;

5           means for relatively moving a surface to be scanned and that is positioned substantially at  
6      the image surface of the laser array imaging lens, in a sub-scanning direction that is roughly  
7      perpendicular to the direction of the imaged dots that form one or more rows at the image  
8      surface.

1       9. The laser array imaging lens according to claim 1, wherein the first lens component consists  
2      of a single lens element.

1       10. The laser array imaging lens according to claim 2, wherein the first lens component consists  
2      of a single lens element.

1       11. The combination according to claim 3, wherein the first lens component consists of a single

2 lens element.

1 12. The combination according to claim 4, wherein the first lens component consists of a single  
2 lens element.

1 13. The image-forming device according to claim 5, wherein the first lens component consists of  
2 a single lens element.

1 14. The image-forming device according to claim 6, wherein the first lens component consists of  
2 a single lens element.

1 15. The image-forming device according to claim 7, wherein the first lens component consists of  
2 a single lens element.

1 16. The image-forming device according to claim 8, wherein the first lens component consists of  
2 a single lens element.

1 17. The laser array imaging lens according to claim 2, wherein the stop is positioned so that the  
2 laser array imaging lens is substantially telecentric on the light-source side.

1 18. The combination according to claim 4, wherein the stop is positioned so that the laser array  
2 imaging lens is substantially telecentric on the light-source side.

1 19. The image-forming device according to claim 6, wherein the stop is positioned so that the  
2 laser array imaging lens is substantially telecentric on the light-source side.

1 20. The image-forming device according to claim 8, wherein the stop is positioned so that the  
2 laser array imaging lens is substantially telecentric on the light-source side.